

## **IN THE CLAIMS:**

This listing of claims will replace all prior versions, and listing, of claims in the application.

### **Listing of the Claims:**

1. (Cancelled)
2. (Currently amended) A method according to Claim 1 ~~34 characterised in that~~ wherein the step of processing of the approximate results incorporates updating orthogonality using small updates to produce decorrelation in a second order statistics procedure.
3. (Currently amended) A method according to Claim 2 ~~characterised in that~~ wherein updating orthogonality is implemented by a technique referred to as Jacobi and involving diagonalisation of a symmetric matrix by determining and applying rotations iteratively until off-diagonal elements of the matrix become substantially equal to zero.
4. (Currently amended) A method according to Claim 3 ~~characterised in that it includes~~ including a second stage of initialisation using results obtained for each leading window to initialise independence of decorrelated signals associated with the respective following window, this second stage using independent component analysis (ICA) to apply small rotation updates to initialise signals in a higher than second order statistics procedure to produce signal independence and separation.
5. (Currently amended) A method according to Claim 4 ~~characterised in that~~ wherein the higher than second order statistics procedure is at least one of a third order and a fourth order statistics procedure.
6. (Currently amended) A method according to Claim 1 ~~34 characterised in that it is implemented in~~ including:
  - a) an acquisition phase in which signals are separated and desired signals are identified among the separated signals, and

- b) a subsequent phase in which only desired signals are processed to separation.
7. (Currently amended) A method according to Claim ~~134~~ characterised in that wherein the signals associated with pairs of windows are statistical measures of data in the windows.
8. (Currently amended) A method according to Claim ~~134~~ characterised in that it ~~incorporates~~ incorporating:
- a) an acquisition stage of processing a first leading window of data to obtain first results, and
- b) a subsequent stage of processing following windows by iteratively updating immediately preceding results using subsequent data snapshots to produce snapshot results and combining the snapshot results with the immediately preceding results, the immediately preceding results being those obtained in a respective immediately preceding update if any and being the first results otherwise.
9. (Currently amended) A method according to Claim 8 characterised in that wherein prior to combining the snapshot results with the immediately preceding results, the immediately preceding results are weighted with a forget factor to implement an exponentially fading following window
10. (Currently amended) A method according to Claim 8 characterised in that wherein the first results comprise a mean vector of signal samples and a covariance matrix of a data matrix of the first leading window in each case, and the method includes decorrelation and normalisation of the data matrix to obtain signal vectors from which to obtain their moment as a fourth order tensor.
11. (Currently amended) A method according to Claim 8 characterised in that wherein the snapshot results comprise a mean snapshot vector and a snapshot covariance matrix, a decorrelated and normalised snapshot equivalent providing signal vectors from which to

obtain their moment as a fourth order tensor update, and prior to combining the snapshot results with the immediately preceding results, the snapshot results are weighted by a forget factor  $p$  and the immediately preceding results are weighted by a further forget factor  $(1-p)$  to implement an exponentially fading window, where  $0 < p < 1$ .

12. (Currently amended) Computer apparatus for dynamic blind signal separation programmed to process signals associated with windows of data ~~characterised in that~~ wherein the computer apparatus is also programmed to:
  - a) process pairs of successive windows, each pair having a leading window and a following window,
  - b) use results obtained in connection with each leading window to implement separate initialisation of orthogonality and independence of signals associated with the respective following window and obtain approximate results for the following window, and
  - c) ~~processing~~ the approximate results to achieve signal separation.
13. (Currently amended) Computer apparatus according to Claim 12 ~~characterised in that it is~~ programmed to update orthogonality of the approximate results using small updates to produce decorrelation in a second order statistics procedure.
14. (Currently amended) Computer apparatus according to Claim 13 ~~characterised in that it is~~ programmed to update orthogonality by a technique referred to as Jacobi and involving diagonalisation of a symmetric matrix by determining and applying rotations iteratively until off-diagonal elements of the matrix become substantially equal to zero.
15. (Currently amended) Computer apparatus according to Claim 14 ~~characterised in that it is~~ programmed to implement a second stage of initialisation using results obtained for each leading window to initialise independence of decorrelated data associated with the respective following window, this second stage involving ICA to apply small rotation updates to initialised data in a higher than second order statistics procedure to produce signal independence and separation.

16. (Currently amended) Computer apparatus according to Claim 15 ~~characterised in that~~ wherein the higher than second order statistics procedure is at least one of a third order and a fourth order statistics procedure.
17. (Currently amended) Computer apparatus according to Claim 12 ~~characterised in that it is~~ programmed to implement an acquisition phase in which signals are separated and desired signals are identified among the separated signals, and a subsequent phase in which only desired signals are processed to separation.
18. (Currently amended) Computer apparatus according to Claim 12 ~~characterised in that~~ wherein the signals associated with windows are statistical measures of data in the windows.
19. (Currently amended) Computer apparatus according to Claim 12 ~~characterised in that it is~~ programmed to implement an acquisition stage of processing a first leading window of data to obtain first results, and a subsequent stage of processing following windows by iteratively updating immediately preceding results using subsequent data snapshots to produce snapshot results and combining the snapshot results with the immediately preceding results, the immediately preceding results being those obtained in a respective immediately preceding update if any and being the first results otherwise.
20. (Currently amended) Computer apparatus according to Claim 19 ~~characterised in that it is~~ programmed to implement an exponentially fading following window by weighting the immediately preceding results with a forget factor prior to combining the snapshot results with the immediately preceding results.
21. (Currently amended) Computer apparatus according to Claim 19 ~~characterised in that~~ wherein the first results comprise a mean vector of signal samples and a covariance matrix of a data matrix of the first leading window in each case, and the computer apparatus is programmed to implement decorrelation and normalisation of the data matrix to obtain signal vectors from which to obtain their moment as a fourth order tensor.

22. (Currently amended) Computer apparatus according to Claim 19 ~~characterised in that~~ wherein the snapshot results comprise a mean snapshot vector and a snapshot covariance matrix, and the computer apparatus is programmed to produce a decorrelated and normalised snapshot equivalent and to obtain therefrom signal vectors and their moment as a fourth order tensor update, to weight the snapshot results by a forget factor  $p$  and the immediately preceding results by a further forget factor  $(1-p)$  to implement an exponentially fading window, where  $0 < p < 1$ , and to implement such weighting prior to combining the snapshot results with the immediately preceding results.
23. (Currently amended) A computer software product comprising a computer readable medium containing computer readable instructions for controlling operation of computer apparatus to implement ~~for~~ dynamic blind signal separation by processing signals associated with windows of data, ~~characterised in that wherein the software has computer~~ readable instructions provide a means for controlling the computer apparatus to:
- a) process pairs of successive windows, each pair having a leading window and a following window,
  - b) use results obtained in connection with each leading window to implement separate initialisation of orthogonality and independence of signals associated with the respective following window and obtain approximate results for the following window, and
  - c) process the approximate results to achieve signal separation.
24. (Currently amended) A computer software product according to Claim 23 ~~characterised in that it includes wherein the computer readable instructions for processing also provide a means for controlling the computer apparatus to process~~ the approximate results using small updates to update orthogonality and produce decorrelation in a second order statistics procedure.
25. (Currently amended) A computer software product according to Claim 24 ~~characterised in that it includes wherein the computer readable instructions for updating also provide a means for controlling the computer apparatus to update~~ orthogonality by a technique

referred to as Jacobi and involving diagonalisation of a symmetric matrix by determining and applying rotations iteratively until off-diagonal elements of the matrix become substantially equal to zero.

26. (Currently amended) A computer software product according to Claim 24 ~~characterised in that it includes~~ wherein the computer readable for implementing instructions also provide a means for controlling the computer apparatus to implement a second stage of initialisation using results obtained for each leading window to initialise independence of decorrelated data associated with the respective following window, this second stage using ICA to apply small rotation updates to initialised data in a higher than second order statistics procedure to produce signal independence and separation.
27. (Currently amended) A computer software product according to Claim 26 ~~characterised in that~~ wherein the higher than second order statistics procedure is at least one of a third order and a fourth order statistics procedure.
28. (Currently amended) A computer software product according to Claim 23 ~~characterised in that it includes~~ wherein the computer readable instructions for implementing also provide a means for controlling the computer apparatus to implement an acquisition phase in which signals are separated and desired signals are identified among the separated signals, and a subsequent phase in which only desired signals are processed to separation.
29. (Currently amended) A computer software product according to Claim 23 ~~characterised in that~~ wherein the signals associated with windows are statistical measures of data in the windows.
30. (Currently amended) A computer software product according to Claim 23 ~~characterised in that it includes~~ wherein the computer readable instructions for implementing also provide a means for controlling the computer apparatus to implement an acquisition stage of processing a first leading window of data to obtain first results, and a subsequent stage of processing following windows by iteratively updating immediately preceding results



using subsequent data snapshots to produce snapshot results and combining the snapshot results with the immediately preceding results, the immediately preceding results being those obtained in a respective immediately preceding update if any and being the first results otherwise.

31. (Currently amended) A computer software product according to Claim 30 ~~characterised in that it includes~~ wherein the computer readable instructions for implementing also provide a means for controlling the computer apparatus to implement an exponentially fading following window by weighting the immediately preceding results with a forget factor prior to combining the snapshot results with the immediately preceding results.
32. (Currently amended) A computer software product according to Claim 30 ~~characterised in that~~ wherein the first results comprise a mean vector of signal samples and a covariance matrix of a data matrix of the first leading window in each case, and decorrelation and normalisation of the data matrix to obtain signal vectors from which to obtain their moment as a fourth order tensor.
33. (Currently amended) A computer software product according to Claim 30 ~~characterised in that~~ wherein the snapshot results comprise a mean snapshot vector and a snapshot covariance matrix, and the computer software includes readable instructions for producing also provide a means for controlling the computer apparatus to produce a decorrelated and normalised snapshot equivalent and ~~for obtaining to obtain~~ therefrom signal vectors and their moment as a fourth order tensor update, and for weighting the snapshot results by a forget factor  $p$  and the immediately preceding results by a further forget factor  $(1-p)$  to implement an exponentially fading window, where  $0 < p < 1$ , such weighting being prior to combining the snapshot results with the immediately preceding results.
34. (New) A method for dynamic blind signal separation including:
  - a) processing signals associated with pairs of windows of data each having a leading window and a following window,

- b) processing each following window using results obtained in connection with the respective leading window to implement separate initialisation of orthogonality and independence of signals associated with the following window and obtain approximate results for the following window, and
- c) processing the approximate results to achieve signal separation.